THE RELATIVE ABUNDANCE AND FLIGHT PERIOD OF *MESAPAMEA* SPP. (LEP.: NOCTUIDAE) AT THREE ENGLISH LOCALITIES

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GENITALIA studies on the genus *Mesapamea* over the recent years have shown that the British fauna consists of three species of *Mesapamea: M. secalis, M. didyma* and *M. remmi* (Jordan 1986; 1989). Since the discovery that the genus consisted not of one species in Britain but of several closely allied species, our knowledge of this group has progressed little.

Whilst many specimens in collections may be dissected to confirm their identity, there remains very few studies in which large random samples are examined. The examination of collections has greatly enhanced the information of distribution, especially of *M. secalis* and *M. didyma,* but can be of limited use concerning other aspects of the species biology and in some cases, such as relative frequency, may be misleading.

This paper addresses the questions of flight period and relative abundance between the species.

Sampling Methods

All the samples were collected using a 125w. MB/U lamp in a Robinson trap. They were taken from three localities of differing habitat:

(1) Weyhill (OS grid SU303461) in Hampshire (v.c.12) during 1984 and 1985. This site was amongst open farmland with arable fields and permanent *Lolium* pasture immediately surrounding the trap site.

(2) Virginia Water (OS grid SU997698) in Surrey (v.c.17) during 1985. This site was in open parkland dominated by large clumps of mixed deciduous trees.

(3) Swanton Morley (OS grid TG019188) in Norfolk (v.c.28) during 1985. This site was amongst rough grassland adjacent to a large gravel pit and marshland.

The Weyhill and Virginia Water samples were collected on pre-selected nights throughout the flight period of the species. The Swanton Morley sample however was collected during one week only and therefore can be used for a comparison of relative abundance, but is omitted from the section on flight period as the data is unsuitable.

The identity of all individuals was determined by full dissection of the genitalia. The criteria previously described (Jordan 1986; 1989) being used to separate the species.

Flight Period

The histograms display the numbers of each species caught expressed as weekly totals. They are intended solely for a comparison of timing and duration of flight period and no inferences should be drawn from the

height of peaks, but instead from any overlap in season and coincidence of peaks between species.

The actual numbers of moths trapped on the selected nights during any week may vary for a number of reasons, such as temperature, wind velocity and many other factors. It is reasonable to assume though that in such closely allied species any such factors would act upon the species in question similarly.

The histograms (Figs. 1, 2 and 3) show clearly an overlap of phenology between *M. secalis* and *M. didyma* with the peaks of capture of both species coinciding well throughout the flight period. The very low occurrence of *M. remmi* makes any comment on its flight period virtually impossible, although all three specimens caught occurred within the normal season for the other two species. Thus it appears that these species have complete synchrony in their flight period.

This data agrees well with that of Riley and Southwood (1988) in which their specimens of *M. didyma* occurred throughout the flight period of *M. secalis*.

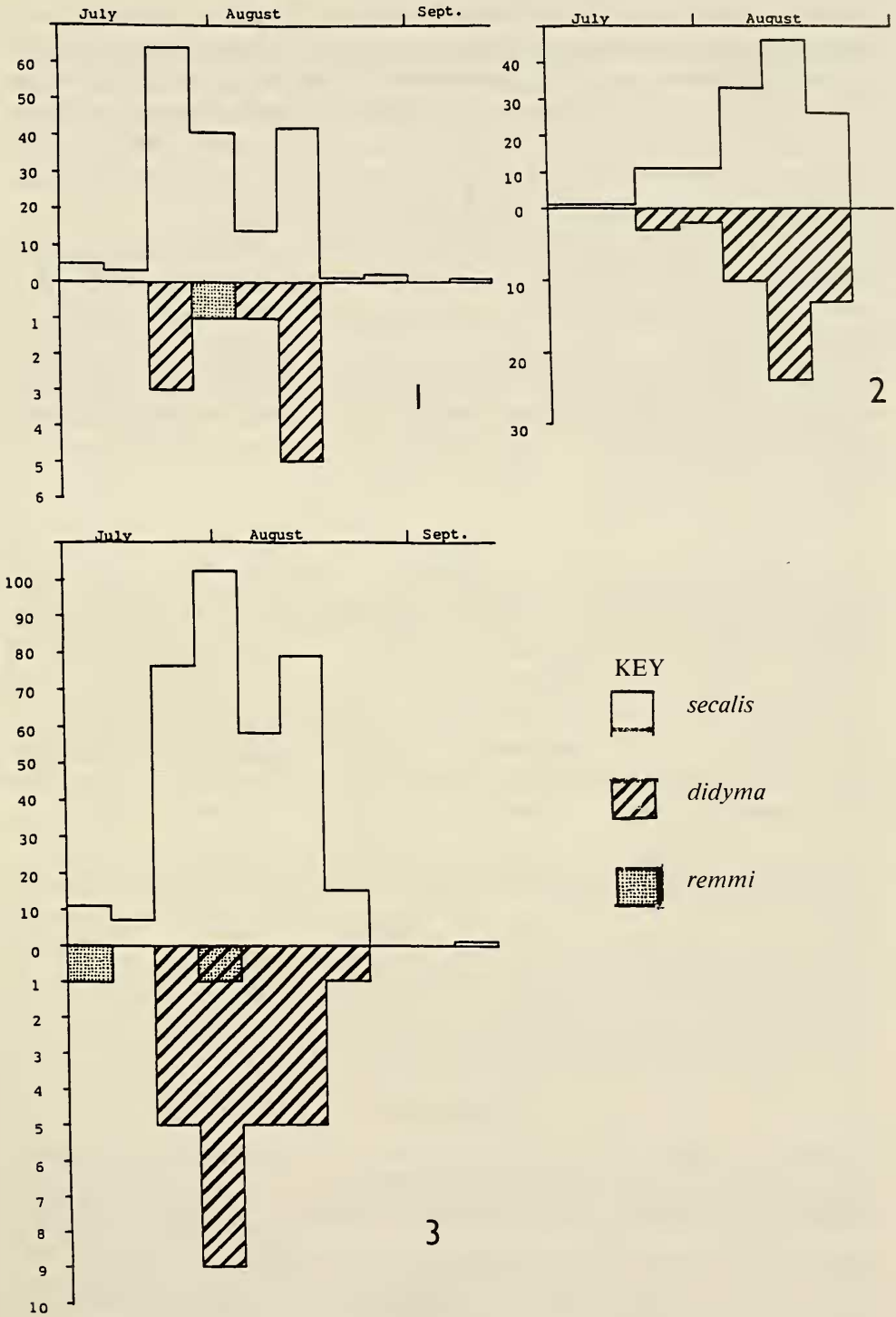
Relative Abundance

Table 1 shows the relative proportions of each species in each sample, expressed both in actual numbers caught and as a percentage of the total in each *Mesapamea* sample.

At all three sites investigated here *M. secalis* was the more frequent species. This has been the case in other smaller samples from other sites (Jordan unpublished). In Shropshire, Riley and Southwood (1988) also found *M. secalis* to be more frequent. In certain parts of Cornwall *M. didyma* is as common as *M. secalis* (Spalding pers. comm.), but normally in Britain *M. didyma* appears to be the scarcer of the two, and in many areas, for example Weyhill, occurs at a very low proportion.

This contradicts many of the initial estimates on the relative abundance of these species. Skinner (1984) mentions *M. didyma* and of it he says "A provisional examination of British material suggests that both this species and *M. secalis* share the same types of habitat and occur equally commonly over much of England."

Many of these estimates come from examination of collections where *M. didyma* is usually disproportionately represented. This situation arises because of the highly polymorphic nature of this species group. Most collections aim to give a representation of the degree to which a species varies, hence specimens of different forms are collected to illustrate any such variety. Each form in the collection appears at a proportion difference from that to which it does in the population. Thus the least common forms are preferentially collected. If two or more species were being confused as a single one then this preferential collecting of forms could result instead in a bias towards one species.



Weekly totals of *Mesapamea secalis/didyma/remmi* captured at:
Fig. 1: Weyhill during 1984.
Fig. 2: Virginia Water during 1985.
Fig. 3: Weyhill during 1985.

Relating this hypothetical situation to *M. secalis* and *M. didyma,* then collections in the past have been built up under the impression that a single polymorphic species was being represented. Upon the subsequent division of *M. secalis* to reveal *M. didyma* then many of these collections are being examined to see if both species are present. The disproportional representation of forms (and hence species) makes *M. didyma* appear much more frequent in collections than it actually is in the field.

This hypothesis is strongly supported when the relative frequencies of different colour forms between the species are analysed (Jordan in prep.), certain forms do indeed occur at much higher frequencies in *M. didyma* than in *M. secalis.*

This highlights the care required when attempting to draw any conclusions concerning frequency largely from material in collections and illustrates the need for more research based on random samples from the field.

Table 1.

The relative frequencies of *Mesapamea secalis/didyma/remmi* amongst four random samples.

Locality and Date	Total sample (n)	Number of each species in sample (Percentage of n given in parentheses)		
		M. secalis	*M. didyma*	*M. remmi*
Weyhill, Hants v.c.12. 1984	183	173 (94.5)	9 (4.9)	1 (0.5)
Weyhill, Hants v.c.12. 1985	376	349 (92.8)	25 (6.6)	2 (0.5)
Virginia Water, Surrey v.c.17 1985	181	129 (71.3)	52 (28.7)	0
Swanton Morley, Norfolk v.c.28. 1985	38	33 (86.8)	5 (13.2)	0

Conclusions

It appears that these three species fly at the same time of the year but that they normally occur at different frequencies, with *M. secalis* generally more abundant than *M. didyma,* and *M. remmi* remaining an exceedingly elusive species so far found at only one English locality. *Mesapamea secalis* and *M. didyma* occur in similar habitats, although more research is required to determine if there are any differing preferences between the species.

It would be particularly interesting to learn of any areas where *M. didyma* predominates, similarly any further occurrence of *M. remmi* would be particularly noteworthy in view of the species' international scarcity.

Acknowledgements

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Postscript: A recent publication (Lempke, B.J., 1991, *Ent. Ber., Amstr.* **51**(2): 17-22) reports on a similar survey. Both species are common in the Netherlands. Overall, the impression is that *didyma* slightly outnumbers *secalis,* although local differences in the ratio occur. Remm originally separated the species on size, and this feature was checked here. In 767 random specimens (340 *secalis,* 417 *didyma*) the wingspan was measured. In the smaller specimens *didyma* predominated, with *secalis* being more common in the larger ones. The overlap was, however, so great that wingspan has no diagnostic value.

No other constant external feature could be found to separate the two.

P.A.S. & B.J.L.

Colydium elongatum (Fabricius) (Col.: Colydiidae) in Wiltshire, Berkshire and Surrey.

For over a century, *Colydium elongatum* was known in Britain only from the New Forest area. Recently, however, examples have turned up in other areas in Southern England and we thought it might be useful to summarise these records as interim documentation of the presumed spread of this beetle. The records are as follows:—

Wiltshire

Grovely Wood: 1 - 5 exx. on 10 occasions between 10.iv.70 and 8.iv.75; on beech and birch (once), sometimes associated with *Platypus* or *Xyloterus* sp. or both. D.R. Nash.

Langley Wood: 12.iv.74 1 ex. on fallen oak. D.R.Nash.

Burnt Ground Wood: 31.v.74 several exx. on beech log. D.R. Nash.

Great Ridge: 13.viii.80 2 exx. on sycamore log, associated with *Xyloterus signatum* and *X. domesticus.* D.R. Nash.

Savernake Forest: 29.v.76 1 ex. from a rotten beech. C. MacKechnie-Jarvis (1976 *Proc. Brit. ent. nat. Hist. Soc.* **9**: 122).